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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PATEL, ASHOKKUMAR B	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/980,354	LEGALLAIS ET AL.	
	Examiner	Art Unit	
	Ashok B. Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-15 are presented for examination.

Response to Arguments

2. Applicant's arguments filed 03/02/2007 have been fully considered but they are not persuasive for the following reasons:

Rejection of claim 14 under 35 USC 102(b) as being anticipated by Chin et al. (US Pat No 5,617,421) (hereinafter Chin)

Applicant's argument: Claim 14

"Applicants contend the segments are not equivalent to applicants' claimed bus, however, even if they were equivalent Chin does not teach a segment identifier. Thus a domain does not identify a segment and cannot be the same as a bus identifier."

"For at least the foregoing reasons Chin does not disclose any communication network comprising buses connected by bridges, each bus being identified by a unique bus identifier. Because Chin fails to disclose each and every feature in applicants' claim 14, Chin cannot anticipate the claimed invention and the rejection should be withdrawn."

Examiner's response:

Applicant recites in the above argument that "communication network comprising buses connected by bridges."

Chin teaches ""communication network comprising buses connected by bridges" at the following locations in it's teachings as follows:

First let us look at col. 1, line 28-52, "A virtual network domain is a subset of the endstations coupled to a physical network, wherein each of the endstations in the

subset may communicate with another but cannot communicate with endstations that are not part of the subset. Thus, a single physical network may be divided up into a multiplicity of conceptual or virtual networks, and the desired isolation between user groups can be provided in a single physical network.

Segmented networks are typically created to increase the throughput of a network that has a large number of endstations. As the number of endstations of a network increases, the effective throughput for each endstation of the network decreases. By breaking the network into smaller interconnected segments that each have fewer endstations, the load for each segment in the network is reduced, leading to increased throughput of the network. Interconnection of the segments of prior segmented networks is achieved by connecting several individual LAN segments to the ports of a "switching fabric circuit". The term "switching fabric circuit" as used here is meant to encompass any circuit that provides for the processing and forwarding of information between LAN segments in a segmented network. For example, one prior switching fabric circuit includes a number of conventional Ethernet bridges connected to a backbone network that is controlled by a system processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Second, Chin teaches at col. 6, line 53-64, "Each port, at a minimum, preferably includes transmit and receive circuitry according to the implemented LAN standard of the LAN segment or interswitch link to which it is connected. For Ethernet LAN segments and interswitch links, each port preferably includes medium access control

(MAC) receive circuitry for receiving LAN packets from the LAN segment or interswitch link and MAC transmit circuitry for transmitting LAN packets over the LAN segment or interswitch link. Thus, ports can be standard LAN bridges, and the switching fabric circuits can be standard bridge and backbone bus bridging interconnection circuits that are each controlled by a single switching processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Now, we have learned that communication network comprising buses, Chin further teaches at "routing table data comprising data representative of at least a bus identifier at the following locations in it's teachings as follows:

First let us look at col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required."

Thus it is understood, in accordance with Chin as stated above, that each port, which is bridge of course, maintains it's own "local forwarding table"(routing table data).

The following example that Chin has illustrated at col. 13, line 14-52 of the "routing Table data " maintained by each port.

"The content of forwarding tables and the process of intraswitch transactions will now be discussed. Table 1 is a sample forwarding table including relevant entries for port 1 to which LAN segment A1 is coupled. The LUT 821 includes entries for all those endstations coupled to LAN segment A1 and endstations coupled to other known LAN segments having the same domain. Each entry is defined by the endstation address,

which is, in fact, an IEEE standard 48-bit memory access controller (MAC) address. Each entry also includes information that indicates whether the end station is local to that port or resides in a remote port. In this example, a logic 0 indicates that the endstation resides in a local LAN segment and a logic 1 indicates that the endstation resides in a remote LAN segment. If the endstation resides in a remote LAN segment, the port to which system packets are to be forwarded is also stored. Finally, a domain identification field is also maintained.

TABLE 1

PORT 1 FORWARDING TABLE

ENDSTATION	LOCAL/ REMOTE	PORT	DOMAIN
SA1	0	X	VN1
SA3	0	X	VN1
SA5	1	3	VN1
SA7	1	3	VN1
SB1	1	5	VN1
SB3	1	5	VN1
SC1	1	4	VN1
SC3	1	4	VN1

As shown in Table 1 endstations SA1 and SA3 are local stations in domain VN1. Endstations SA5 and SA7 are remote endstations. Similarly endstations SB1, SB3, SC1 and SC3 are also remote endstations."

Thus as Chin has explained above, a domain along with "LOCAL/REMOTE" identify a segment of LAN wherein we already have a knowledge that Chin's LAN segments "are applicants' claimed buses".

And thus, Chin teaches "routing table data comprising data representative of at least a bus identifier."

Chin clearly teaches that LAN segments could belong to just one domain in col. 5, line 25-46, therefore, domain does not identify a segment and cannot be the same as a bus identifier.

Claims 1-11 and 13 are rejected under 35 USC 103(a)as being unpatentable over Chin in view of Civanlar et al. (US Pat No 6,078,963) (hereinafter Civanlar).

Applicant's argument: Claim 11-13

"As pointed out above, Chin discloses domains, which are different from bus identifiers. Because the combination of references, Civanlar an Chin fail to teach at least a network communication bus with bus identifier the rejection should be withdrawn. Claim 1 is non-obvious over Chin in view of Civanlar."

"Furthermore, the dependent claims 2-13 are likewise non-obvious over the combination of references because each claim includes the features of claim 1."

Examiner's response:

Examiner agrees that Chin discloses domains, which are different from bus identifiers, which Chin clearly indicates in col. 5, line 25-46, therefore, domain does not identify a segment and cannot be the same as a bus identifier.

However, It is the claims that define the claimed invention, and it is claims, not specifications that are anticipated or unpatentable. *Constant v. Advanced Micro-Devices Inc.*, 7 USPQ2d 1064.

Claim 1 recites "communication network comprising buses connected by bridges."

Chin teaches ""communication network comprising buses connected by bridges" at the following locations in it's teachings as follows:

First let us look at col. 1, line 28-52, "A virtual network domain is a subset of the endstations coupled to a physical network, wherein each of the endstations in the subset may communicate with another but cannot communicate with endstations that are not part of the subset. <u>Thus, a single physical network may be divided up into a multiplicity of conceptual or virtual networks</u>, and the desired isolation between user groups can be provided in a single physical network.

Segmented networks are typically created to increase the throughput of a network that has a large number of endstations. As the number of endstations of a network increases, the effective throughput for each endstation of the network decreases. By breaking the network into smaller interconnected segments that each have fewer endstations, the load for each segment in the network is reduced, leading to increased throughput of the network. <u>Interconnection of the segments of prior segmented networks is achieved by connecting several individual LAN segments to the ports of a "switching fabric circuit".</u> The term "switching fabric circuit" as used here is meant to encompass any circuit that provides for the processing and forwarding of information between LAN segments in a segmented network. For example, one prior switching fabric circuit includes a number of conventional <u>Ethernet bridges</u> connected to a backbone network that is controlled by a system processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Second, Chin teaches at col. 6, line 53-64, "Each port, at a minimum, preferably includes transmit and receive circuitry according to the implemented LAN standard of the LAN segment or interswitch link to which it is connected. For Ethernet LAN segments and interswitch links, each port preferably includes medium access control (MAC) receive circuitry for receiving LAN packets from the LAN segment or interswitch link and MAC transmit circuitry for transmitting LAN packets over the LAN segment or interswitch link. Thus, ports can be standard LAN bridges, and the switching fabric circuits can be standard bridge and backbone bus bridging interconnection circuits that are each controlled by a single switching processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Now, we have learned that communication network comprising buses, Chin further teaches at "routing table data comprising data representative of at least a bus identifier at the following locations in it's teachings as follows:

First let us look at col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required."

Thus it is understood, in accordance with Chin as stated above, that each port, which is bridge of course, maintains it's own "local forwarding table"(routing table data).

The following example that Chin has illustrated at col. 13, line 14-52 of the "routing Table data " maintained by each port.

"The content of forwarding tables and the process of intraswitch transactions will now be discussed. Table 1 is a sample forwarding table including relevant entries for port 1 to which LAN segment A1 is coupled. The LUT 821 includes entries for all those endstations coupled to LAN segment A1 and endstations coupled to other known LAN segments having the same domain. Each entry is defined by the endstation address, which is, in fact, an IEEE standard 48-bit memory access controller (MAC) address. Each entry also includes information that indicates whether the end station is local to that port or resides in a remote port. <u>In this example, a logic 0 indicates that the endstation resides in a local LAN segment and a logic 1 indicates that the endstation resides in a remote LAN segment.</u> If the endstation resides in a remote LAN segment, the port to which system packets are to be forwarded is also stored. Finally, a domain identification field is also maintained.

TABLE 1

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SB3	1	5	VN1
SC1	1	4	VN1
SC3	1	4	VN1

As shown in Table 1 endstations SA1 and SA3 are local stations in domain VN1. Endstations SA5 and SA7 are remote endstations. Similarly endstations SB1, SB3, SC1 and SC3 are also remote endstations."

Thus as Chin has explained above, a domain along with "LOCAL/REMOTE" identify a segment of LAN wherein we already have a knowledge that Chin's LAN segments "are applicants' claimed buses".

And thus, Chin teaches "routing table data comprising data representative of at least a bus identifier."

Chin clearly teaches that LAN segments could belong to just one domain in col. 5, line 25-46, therefore, domain does not identify a segment and cannot be the same as a bus identifier.

Civanlar's teachings of applied concept is of a paramount importance tone having ordinary skills in the art as stated below:

Civanlar teaches at abstract, " An improved network router having a plurality of intelligent router ports. Each intelligent router port may have its own routing and/or forwarding engines." , and col. 3, line 30-62, "Each intelligent router port 103 may be configured to <u>independently generate its own routing tables</u> without the need for a central routing engine and/or a master routing table. In some embodiments, information necessary for generating and/or updating routing tables may be contained in routing protocol packets received by the intelligent router port 103 from the network interface. Any known types of routing protocols packets may be received by the routing engine 107, such as those conforming to the routing Internet protocol (RIP), the open shortest path forwarding (OSPF) protocol, or the border gateway protocol 4 (BGP4). <u>In embodiments where the routing table is independently generated, each forwarding engine 105 may be configured to forward new routing table configuration data received</u>

<u>on one or more of the network interfaces 110 to every other intelligent router port 103 for updating each of the routing databases 104.</u> In further embodiments, the intelligent router ports 103 may <u>update</u> **<u>(concatenating)</u>** their own routing tables according to the contents of incoming routing protocol packets. In still further embodiments, the intelligent router ports 103 may update other routers (not shown) interconnected with the router 100 using, for example, RIP, OSPF, and/or BGP4. (6) The routing database 104 may be configured to store the routing tables and/or other data for use by the forwarding engine 105 and the routing engine 107. A routing table may contain information for switching data packets originating from one intelligent router port 103 to another intelligent router port. Routing tables and/or other similar data may relate one or more addresses (e.g. Internet protocol (IP) packet addresses contained in IP headers) received on a network interface 110 with one or more outgoing intelligent router ports 103 interconnected via the switching fabric 102.")

It would have been an obvious to one of an ordinary skill in art, having the teachings of Chin and Civanlar in front of him at the time of invention was made, to implement the teachings of Civanlar into the switching fabric circuit of Chin in the order of the steps as described in the claims limitations (a) through (e) such that the routing/forwarding table can be shared among the ports of the Chin's LAN segments (buses).

This would have been obvious because as Civanlar teaches at col. 1, line 51-58, "In one aspect of the invention, some or all of the ports in a router (Bridge for the instant application) independently perform routing and forwarding functions. Since processing

is distributed among the router (Bridge for the instant application) ports, bottlenecking problems of conventional routers (Bridge for the instant application) are avoided. Some or all of the router ports may include their own routing engine, forwarding engine, and/or routing tables. Thus, there is no need for a centralized routing engine, forwarding engine, and/or routing table.

Applicant's argument: Claim 12

"Claim 12 is rejected under 35 USC 103(a) as being unpatentable over Chin in view of Civanlar and further in view of Oechsle.

The combination of Chin, Civanlar and Oechsle fail to teach applicants' claimed features recited in claim 12 and the rejection should be withdrawn."

Examiner's response:

Oechsle teaches the method according to claim 9, wherein said selection is made among the shortest paths to the remote bus (col. 4, lines 45-55).

Therefore, it would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Chin and Oechsle because they both with updating bridge routing tables to select paths to a remote network, and would be obvious to keep the entries in the routing/forwarding tables of Chin which are the shortest path and delete the entries of the table which are not efficient. Furthermore, the teaching of Oechsle for selection is made among the shortest paths to the remote bus, would allow picking the most capable path for transmission thus maximizing efficiency (See Oechsle col. 4, lines 53-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (hereinafter Chin) (US 5, 617, 421) in view of Civanlar et al. (herein after Civanlar) (US 6, 078, 963)

Referring to claim 1,

Chin teaches method for determining a routing table in a communication network comprising buses connected by bridges (col. 6, line 61-67, Thus, ports can be standard LAN bridges, and the switching fabric circuits can be standard bridge and backbone bus bridging interconnection circuits that are each controlled by a single switching processor. It is preferable, however, that the ports further include circuitry for processing and forwarding packets to increase the throughput of the switching fabric circuits."), each bridge comprising two companion portals (Fig. 4, elements A, B and C), a first portal being connected to a first bus (Fig. 4, consider any of the element 1-12) and a second portal being connected to a second bus (Fig.1, consider any of the element 1-12) , each bus being identified by a unique bus identifier, each portal being identified by a unique portal identifier (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in

which each port of a switching fabric circuit maintains its own forwarding table."), said method being characterized in that it comprises the steps of:

Chin teaches communication network comprising buses connected by bridges; (First let us look at col. 1, line 28-52, "A virtual network domain is a subset of the endstations coupled to a physical network, wherein each of the endstations in the subset may communicate with another but cannot communicate with endstations that are not part of the subset. Thus, a single physical network may be divided up into a multiplicity of conceptual or virtual networks, and the desired isolation between user groups can be provided in a single physical network.

Segmented networks are typically created to increase the throughput of a network that has a large number of endstations. As the number of endstations of a network increases, the effective throughput for each endstation of the network decreases. By breaking the network into smaller interconnected segments that each have fewer endstations, the load for each segment in the network is reduced, leading to increased throughput of the network. Interconnection of the segments of prior segmented networks is achieved by connecting several individual LAN segments to the ports of a "switching fabric circuit". The term "switching fabric circuit" as used here is meant to encompass any circuit that provides for the processing and forwarding of information between LAN segments in a segmented network. For example, one prior switching fabric circuit includes a number of conventional Ethernet bridges connected to a backbone network that is controlled by a system processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Second, Chin teaches at col. 6, line 53-64, "Each port, at a minimum, preferably includes transmit and receive circuitry according to the implemented LAN standard of the LAN segment or interswitch link to which it is connected. For <u>Ethernet LAN segments</u> and interswitch links, each port preferably includes medium access control (MAC) receive circuitry for receiving LAN packets from the LAN segment or interswitch link and MAC transmit circuitry for transmitting LAN packets over the LAN segment or interswitch link. <u>Thus, ports can be standard LAN bridges, and the switching fabric circuits can be standard bridge and backbone bus bridging interconnection circuits that are each controlled by a single switching processor."</u>

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Now, we have learned that communication network comprising buses, Chin further teaches at "routing table data comprising data representative of at least a bus identifier at the following locations in it's teachings as follows:

First let us look at col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required."

Thus it is understood, in accordance with Chin as stated above, that each port, which is bridge of course, maintains it's own "local forwarding table"(routing table data).

The following example that Chin has illustrated at col. 13, line 14-52 of the "routing Table data " maintained by each port.

"The content of forwarding tables and the process of intraswitch transactions will now be discussed. Table 1 is a sample forwarding table including relevant entries for port 1 to which LAN segment A1 is coupled. The LUT 821 includes entries for all those endstations coupled to LAN segment A1 and endstations coupled to other known LAN segments having the same domain. Each entry is defined by the endstation address, which is, in fact, an IEEE standard 48-bit memory access controller (MAC) address. Each entry also includes information that indicates whether the end station is local to that port or resides in a remote port. <u>In this example, a logic 0 indicates that the endstation resides in a local LAN segment and a logic 1 indicates that the endstation resides in a remote LAN segment.</u> If the endstation resides in a remote LAN segment, the port to which system packets are to be forwarded is also stored. Finally, a domain identification field is also maintained.

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SC1	1	4	VN1
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As shown in Table 1 endstations SA1 and SA3 are local stations in domain VN1. Endstations SA5 and SA7 are remote endstations. Similarly endstations SB1, SB3, SC1 and SC3 are also remote endstations."

Thus as Chin has explained above, a domain along with "LOCAL/REMOTE" identify a segment of LAN wherein we already have a knowledge that Chin's LAN segments "are applicants' claimed buses".

And thus, Chin teaches "routing table data comprising data representative of at least a bus identifier.)

Although, Chin teaches at col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required." , as well as the scattered teachings of "learning and sharing of the forwarding table", Chin fails to teach the following (a) transmitting, by a given portal, routing table data stored by said given portal to a companion portal associated with said given portal and receiving, by said given portal, routing table data from the companion portal; and

(b) concatenating said routing table data received in step (a) with the contents of the routing table data stored by said given portal

(c) broadcasting said routing table data stored by said given portal on a local bus associated with the given portal;

(d) receiving routing table data broadcast by other portals on the local bus and concatenating said received routing table data broadcast by other portals with contents of the routing table data stored by said given portal ;

(e) repeating the above steps until routing data concerning all buses in the network has been received by said given portal

Civanlar teaches at abstract, " An improved network router having a plurality of intelligent router ports. Each intelligent router port may have its own routing and/or forwarding engines." , and col. 3, line 30-62, "Each intelligent router port 103 may be configured to independently generate its own routing tables without the need for a central routing engine and/or a master routing table. In some embodiments, information necessary for generating and/or updating routing tables may be contained in routing protocol packets received by the intelligent router port 103 from the network interface. Any known types of routing protocols packets may be received by the routing engine 107, such as those conforming to the routing Internet protocol (RIP), the open shortest path forwarding (OSPF) protocol, or the border gateway protocol 4 (BGP4). In embodiments where the routing table is independently generated, each forwarding engine 105 may be configured to forward new routing table configuration data received on one or more of the network interfaces 110 to every other intelligent router port 103 for updating each of the routing databases 104. In further embodiments, the intelligent router ports 103 may update **(concatenating)** their own routing tables according to the contents of incoming routing protocol packets. In still further embodiments, the intelligent router ports 103 may update other routers (not shown) interconnected with the router 100 using, for example, RIP, OSPF, and/or BGP4. (6) The routing database 104 may be configured to store the routing tables and/or other data for use by the forwarding engine 105 and the routing engine 107. A routing table may contain

information for switching data packets originating from one intelligent router port 103 to another intelligent router port. Routing tables and/or other similar data may relate one or more addresses (e.g. Internet protocol (IP) packet addresses contained in IP headers) received on a network interface 110 with one or more outgoing intelligent router ports 103 interconnected via the switching fabric 102.")

It would have been an obvious to one of an ordinary skill in art, having the teachings of Chin and Civanlar in front of him at the time of invention was made, to implement the teachings of Civanlar into the switching fabric circuit of Chin in the order of the steps as described in the claims limitations (a) through (e) such that the routing/forwarding table can be shared among the ports of the Chin's LAN segments (buses).

This would have been obvious because as Civanlar teaches at col. 1, line 51-58, "In one aspect of the invention, some or all of the ports in a router (Bridge for the instant application) independently perform routing and forwarding functions. Since processing is distributed among the router (Bridge for the instant application) ports, bottlenecking problems of conventional routers (Bridge for the instant application) are avoided. Some or all of the router ports may include their own routing engine, forwarding engine, and/or routing tables. Thus, there is no need for a centralized routing engine, forwarding engine, and/or routing table.

Referring to claim 2,

Chin teaches the method according to claim 1, wherein the routing table data transmitted by said given portal during the <u>first iteration</u> of the step (a) comprises an

identifier of the given portal and an identifier of the given portal's local bus; the routing table data received by said given portal from the companion portal during the first iteration of step (a) comprises an identifier of said companion portal and an identifier of the companion portal's local bus. (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table." , col. 7, line 12-16, col. 8, line 5-24)

Referring to claim 3,

Chin teaches the method according to claim 2, wherein said routing table data transmitted, respectively received, by said given portal comprises the given portal's identifier, respectively the identifier of the given portal's companion portal Chin teaches (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required.", col. 11, 29-43.)

Referring to claim 4,

Chin teaches the method according to claim 2, wherein the routing table of a portal comprises the identifiers of remote buses, and for each remote bus, the identifier of the portal local to the remote bus having initially transmitted the remote bus identifier, the depth of the remote bus compared to the bus local to the given portal, and the identifier of the local portal having broadcast the routing table data comprising the remote bus identifier on the local bus. (col. 13, Table 1, col. 14, Table 2, and col.16,

Table 4, col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required.", col. 11, 29-43.)

Referring to claims 5 and 6,

Keeping in mind the teachings of Chin as stated above, Chin fails to teach the method according claim 1, wherein the routing table data transmitted or broadcast by the given portal contains the entire routing table, and the method according to claim 5, wherein the given portal stops iterating the steps (a) to (e) when the routing tables received from the companion portal and local portals contain only data which is redundant with the given portal's own routing table.

Civanlar teaches at abstract, " An improved network router having a plurality of intelligent router ports. Each intelligent router port may have its own routing and/or forwarding engines.", and col. 3, line 30-62, "Each intelligent router port 103 may be configured to <u>independently generate its own routing tables</u> without the need for a central routing engine and/or a master routing table. In some embodiments, information necessary for generating and/or updating routing tables may be contained in routing protocol packets received by the intelligent router port 103 from the network interface. Any known types of routing protocols packets may be received by the routing engine 107, such as those conforming to the routing Internet protocol (RIP), the open shortest path forwarding (OSPF) protocol, or the border gateway protocol 4 (BGP4). <u>In embodiments where the routing table is independently generated, each forwarding</u>

engine 105 may be configured to forward new routing table configuration data received on one or more of the network interfaces 110 to every other intelligent router port 103 for updating each of the routing databases 104. In further embodiments, the intelligent router ports 103 may update (stops iterating) their own routing tables according to the contents of incoming routing protocol packets. In still further embodiments, the intelligent router ports 103 may update other routers (not shown) interconnected with the router 100 using, for example, RIP, OSPF, and/or BGP4. (6) The routing database 104 may be configured to store the routing tables and/or other data for use by the forwarding engine 105 and the routing engine 107. A routing table may contain information for switching data packets originating from one intelligent router port 103 to another intelligent router port. Routing tables and/or other similar data may relate one or more addresses (e.g. Internet protocol (IP) packet addresses contained in IP headers) received on a network interface 110 with one or more outgoing intelligent router ports 103 interconnected via the switching fabric 102.")

It would have been an obvious to one of an ordinary skill in art, having the teachings of Chin and Civanlar in front of him at the time of invention was made, to implement the teachings of Civanlar into the switching fabric circuit of Chin in the order of the steps as described in the claims limitations (a) through (e) such that the routing/forwarding table can be shared among the ports of the Chin's LAN segments (buses).

This would have been obvious because as Civanlar teaches at col. 1, line 51-58, "In one aspect of the invention, some or all of the ports in a router (Bridge for the instant

application) independently perform routing and forwarding functions. Since processing is distributed among the router (Bridge for the instant application) ports, bottlenecking problems of conventional routers (Bridge for the instant application) are avoided. Some or all of the router ports may include their own routing engine, forwarding engine, and/or routing tables. Thus, there is no need for a centralized routing engine, forwarding engine, and/or routing table.

Referring to claim 7,

Chin teaches the method according to claim 1, wherein the routing table data transmitted or broadcast by the given portal comprises only a part of the routing table which was not transmitted or broadcast by said given portal during a previous step (Fig.6, element 620).

Referring to claim 8,

Keeping in mind the teachings of Chin as stated above, Chin fails to teach t the teaches the method according to claim 7, wherein the given portal stops iterating the steps (a) to (e) when the given portal did not receive routing data during the previous iteration. Civanlar teaches at abstract, " An improved network router having a plurality of intelligent router ports. Each intelligent router port may have its own routing and/or forwarding engines.", and col. 3, line 30-62, "Each intelligent router port 103 may be configured to <u>independently generate its own routing tables</u> without the need for a central routing engine and/or a master routing table. In some embodiments, information necessary for generating and/or updating routing tables may be contained in routing protocol packets received by the intelligent router port 103 from the network interface.

Any known types of routing protocols packets may be received by the routing engine 107, such as those conforming to the routing Internet protocol (RIP), the open shortest path forwarding (OSPF) protocol, or the border gateway protocol 4 (BGP4). <u>In embodiments where the routing table is independently generated, each forwarding engine 105 may be configured to forward new routing table configuration data received on one or more of the network interfaces 110 to every other intelligent router port 103 for updating each of the routing databases 104.</u> In further embodiments, the intelligent router ports 103 may <u>update</u> (stops iterating) their own routing tables according to the contents of incoming routing protocol packets. In still further embodiments, the intelligent router ports 103 may update other routers (not shown) interconnected with the router 100 using, for example, RIP, OSPF, and/or BGP4. (6) The routing database 104 may be configured to store the routing tables and/or other data for use by the forwarding engine 105 and the routing engine 107. A routing table may contain information for switching data packets originating from one intelligent router port 103 to another intelligent router port. Routing tables and/or other similar data may relate one or more addresses (e.g. Internet protocol (IP) packet addresses contained in IP headers) received on a network interface 110 with one or more outgoing intelligent router ports 103 interconnected via the switching fabric 102.")

It would have been an obvious to one of an ordinary skill in art, having the teachings of Chin and Civanlar in front of him at the time of invention was made, to implement the teachings of Civanlar into the switching fabric circuit of Chin in the order of the steps as described in the claims limitations (a) through (e) such that the

routing/forwarding table can be shared among the ports of the Chin's LAN segments (buses).

This would have been obvious because as Civanlar teaches at col. 1, line 51-58, "In one aspect of the invention, some or all of the ports in a router (Bridge for the instant application) independently perform routing and forwarding functions. Since processing is distributed among the router (Bridge for the instant application) ports, bottlenecking problems of conventional routers (Bridge for the instant application) are avoided. Some or all of the router ports may include their own routing engine, forwarding engine, and/or routing tables. Thus, there is no need for a centralized routing engine, forwarding engine, and/or routing table.

Referring to claim 9,

Chin teaches the method according to claim 1, wherein the concatenation steps include selection of a unique path from the bus local to the given portal to any remote bus and the deletion of non-selected paths from the routing table of the given portal (Abstract, col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table.").

Referring to claim 10,

Chin teaches the method according to claim 9, wherein said selected path to a given remote bus is a function of portal identifiers stored in the routing table for said given remote bus (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-

38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table.").

Referring to claim 11,

Chin teaches the teaches the method according to claim 9, but fails to teach that the selected path selected path to a given remote bus is a function of the bandwidth of portals on said path. (col. 11, line 44-60, Note: The bus 700 allows the switching fabric circuit A to support heterogeneous LAN segments of various bandwidths. For example, LAN segment A1 can be a 10 Mb/s segment, LAN segment A2 can be a 100 Mb/s segment, and LAN segment can be a 155 Mb/s LAN segment. Synchronous transfers are reserved for transfers between packet processors coupled to 10 Mb/s LAN segments. Bandwidth for the bus may be dynamically allocated such that idle time for the switching fabric circuit A is reduced. For purposes of simplifying discussion, each LAN segment will be assumed to be a 10 Mb/s segment.")

Referring to claim 13,

Chin teaches the teaches the method according to claim 1, wherein a routing table is simplified for the purpose of routing messages to contain a list of remote bus identifiers and for each remote bus whether the given portal shall forward a message from the bus local to the given portal to its companion portal (Abstract, col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table.").

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (hereinafter Chin) (US 5, 617, 421) in view of Civanlar et al. (herein after Civanlar) (US 6, 078, 963) further in view of Oechsle (US Patent 5,570,466, issued 10/29/1996).

Referring to claim 12,

Keeping in mind the teachings of Chin and Civanlar , both of these references fail to teach that the method according to claim 9, wherein said selection is made among the shortest paths to the remote bus, paths of greater length being deleted from the routing table.

Oechsle teaches the method according to claim 9, wherein said selection is made among the shortest paths to the remote bus (col. 4, lines 45-55).

Therefore, it would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Chin and Oechsle because they both with updating bridge routing tables to select paths to a remote network, and would be obvious to keep the entries in the routing/forwarding tables of Chin which are the shortest path and delete the entries of the table which are not efficient. Furthermore, the teaching of Oechsle for selection is made among the shortest paths to the remote bus, would allow picking the most capable path for transmission thus maximizing efficiency (See Oechsle col. 4, lines 53-55).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in

this country, more than one year prior to the date of application for patent in the United States.

7. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Chin et al. (hereinafter Chin) (US 5, 617, 421).

Referring to claim 14,

Chin teaches Portal device (Fig. 4, element A with port 1) adapted to be connected to a first communication bus (Fig. 4, element A1) and adapted to be linked to a companion portal device (Fig.1, elements 2-5) for connection to a second communication bus (Fig.1, elements A2, A3, LINK AC, LINK AB), said portal device comprising:

a bus interface (Fig. 7, element 711) for connection to said first communication bus (Fig. 7, element A1);

a switching fabric interface for connection to said companion portal device (Fig.7, element A);

a memory for storing routing table data (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table."), said routing table data comprising data representative of at least a bus identifier (First let us look at col. 1, line 28-52, "A virtual network domain is a subset of the endstations coupled to a physical network, wherein each of the endstations in the subset may communicate with another but cannot communicate with endstations that are not part of the subset. <u>Thus, a single physical network may be divided up into a multiplicity of</u>

conceptual or virtual networks, and the desired isolation between user groups can be provided in a single physical network.

Segmented networks are typically created to increase the throughput of a network that has a large number of endstations. As the number of endstations of a network increases, the effective throughput for each endstation of the network decreases. By breaking the network into smaller interconnected segments that each have fewer endstations, the load for each segment in the network is reduced, leading to increased throughput of the network. Interconnection of the segments of prior segmented networks is achieved by connecting several individual LAN segments to the ports of a "switching fabric circuit". The term "switching fabric circuit" as used here is meant to encompass any circuit that provides for the processing and forwarding of information between LAN segments in a segmented network. For example, one prior switching fabric circuit includes a number of conventional Ethernet bridges connected to a backbone network that is controlled by a system processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Second, Chin teaches at col. 6, line 53-64, "Each port, at a minimum, preferably includes transmit and receive circuitry according to the implemented LAN standard of the LAN segment or interswitch link to which it is connected. For Ethernet LAN segments and interswitch links, each port preferably includes medium access control (MAC) receive circuitry for receiving LAN packets from the LAN segment or interswitch link and MAC transmit circuitry for transmitting LAN packets over the LAN segment or

interswitch link. Thus, ports can be standard LAN bridges, and the switching fabric circuits can be standard bridge and backbone bus bridging interconnection circuits that are each controlled by a single switching processor."

As such, just as argument recites "communication network comprising buses connected by bridges", Chin teaches "the segments are applicants' claimed bus."

Now, we have learned that communication network comprising buses, Chin further teaches at "routing table data comprising data representative of at least a bus identifier at the following locations in it's teachings as follows:

First let us look at col. 7, line 12-16, "To increase the throughput of the switching fabric circuits, each switching fabric circuit includes circuitry at each port for maintaining a local forwarding table that can be updated by the switching processor as required."

Thus it is understood, in accordance with Chin as stated above, that each port, which is bridge of course, maintains it's own "local forwarding table"(routing table data).

The following example that Chin has illustrated at col. 13, line 14-52 of the "routing Table data " maintained by each port.

"The content of forwarding tables and the process of intraswitch transactions will now be discussed. Table 1 is a sample forwarding table including relevant entries for port 1 to which LAN segment A1 is coupled. The LUT 821 includes entries for all those endstations coupled to LAN segment A1 and endstations coupled to other known LAN segments having the same domain. Each entry is defined by the endstation address, which is, in fact, an IEEE standard 48-bit memory access controller (MAC) address. Each entry also includes information that indicates whether the end station is local to

that port or resides in a remote port. In this example, a logic 0 indicates that the endstation resides in a local LAN segment and a logic 1 indicates that the endstation resides in a remote LAN segment. If the endstation resides in a remote LAN segment, the port to which system packets are to be forwarded is also stored. Finally, a domain identification field is also maintained.

TABLE 1

PORT 1 FORWARDING TABLE

ENDSTATION	LOCAL/ REMOTE	PORT	DOMAIN
SA1	0	X	VN1
SA3	0	X	VN1
SA5	1	3	VN1
SA7	1	3	VN1
SB1	1	5	VN1
SB3	1	5	VN1
SC1	1	4	VN1
SC3	1	4	VN1

As shown in Table 1 endstations SA1 and SA3 are local stations in domain VN1. Endstations SA5 and SA7 are remote endstations. Similarly endstations SB1, SB3, SC1 and SC3 are also remote endstations."

Thus as Chin has explained above, a domain along with "LOCAL/REMOTE" identify a segment of LAN wherein we already have a knowledge that Chin's LAN segments "are applicants' claimed buses".

And thus, Chin teaches "routing table data comprising data representative of at least a bus identifier.")

means for transmitting routing table data stored in said memory to said companion portal (Figs 5 and 6, elements 520 and 620 respectively), for broadcasting routing table data stored in said memory on said first communication bus ((col. 5, line 7-

14, "Forwarding table entries are shared between switching fabric circuits via interswitch links by enclosing the forwarding table entries in the data field of standard LAN packets. If a broadcast or multicast packet is received, the receiving switching fabric circuit performs a look-up of its forwarding table based on the source address field of the broadcast or multicast packet."), for controlling said bus interface (Fig. 7, element 711) and switching fabric interface to receive or transmit routing table data (Fig.7, element A), and for concatenating received routing table data with data stored in said memory during successive receive and transmit cycles relating to routing table data for remote communication buses (col. 10. line 34-42)

Referring to claim 15,

Chin teaches a portal device (Fig. 4, element A with port 1) adapted to be connected to a first communication bus (Fig. 4, element A1) and adapted to be linked to a companion portal device (Fig.1, elements 2-5) for connection to a second communication bus (Fig.1, elements A2, A3, LINK AC, LINK AB), said portal device comprising:

a bus interface (Fig. 7, element 711) connecting to said first communication bus (Fig. 7, element A1);

a switching fabric interface connecting said first portal to said companion portal device (Fig.7, element A);

a memory for storing routing table data (col. 13, Table 1, col. 14, Table 2, and col.16, Table 4, col. 11, line 35-38, "A preferable switching fabric circuit arrangement is one in which each port of a switching fabric circuit maintains its own forwarding table."),

said routing table data including data representative of at least a bus identifier (Chin teaches ""communication network comprising buses connected by bridges" at the following locations in it's teachings as follows:

First let us look at col. 1, line 28-52, "A virtual network domain is a subset of the endstations coupled to a physical network, wherein each of the endstations in the subset may communicate with another but cannot communicate with endstations that are not part of the subset. Thus, a single physical network may be divided up into a multiplicity of conceptual or virtual networks, and the desired isolation between user groups can be provided in a single physical network.

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TABLE 1

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Thus as Chin has explained above, a domain along with "LOCAL/REMOTE" identify a segment of LAN wherein we already have a knowledge that Chin's LAN segments "are applicants' claimed buses".

And thus, Chin teaches "routing table data comprising data representative of at least a bus identifier.")

a processor managing the portal device including controlling said bus interface and said switching fabric interface (Fig. 7, all elements) to receive or transmit routing table data stored in said memory to said companion portal through said switching fabric (Figs 5 and 6, elements 520 and 620 respectively), for broadcasting routing table data stored in said memory on said first communication bus (col. 5, line 7-14, "Forwarding table entries are shared between switching fabric circuits via interswitch links by enclosing the forwarding table entries in the data field of standard LAN packets. If a broadcast or multicast packet is received, the receiving switching fabric circuit performs a look-up of its forwarding table based on the source address field of the broadcast or multicast packet."), and for concatenating received routing table data with data stored in said memory during successive receive and transmit cycles relating to routing table data for remote communication buses (col. 10. line 34-42)

Conclusion

Examiner's note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. Lt is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (571) 272-3972. The examiner can normally be reached on 6:30 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan A. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abp
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